Total number of printed pages: 2 **D/3rd Semester/DCE304**

2023

ENVIRONMENTAL ENGINEERING

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

<table>
<tr><td>1.</td><td>a)</td><td>Why the study of environmental engineering is necessary?</td><td>2</td></tr>
<tr><td></td><td>b)</td><td>How the quantity of water required for municipal uses is estimated?</td><td>2</td></tr>
<tr><td></td><td>c)</td><td>Write about the various types of water demand in a city or town.</td><td>6</td></tr>
<tr><td></td><td>d)</td><td>Describe about the various factors affecting the per capita demand of a city or town.</td><td>10</td></tr>
<tr><td>2.</td><td>a)</td><td>Determine the population after one, two and three decades beyond the last known decade, by using arithmetic increase method and Incremental increase method.
<table><tr><td>Year</td><td>1930</td><td>1940</td><td>1950</td><td>1960</td><td>1970</td></tr><tr><td>Population</td><td>25,000</td><td>28,000</td><td>34,000</td><td>42,000</td><td>47,000</td></tr></table></td><td>10</td></tr>
<tr><td></td><td>b)</td><td>Discuss about various methods adopted for population forecasting.</td><td>10</td></tr>
<tr><td>3.</td><td>a)</td><td>Describe about the quality and quantity of different sources of surface water?</td><td>10</td></tr>
<tr><td></td><td>b)</td><td>How the storage capacity of reservoirs is estimated?</td><td>10</td></tr>
<tr><td>4.</td><td>a)</td><td>Enumerate and discuss briefly the various methods which are adopted collectively for treating public water supplies drawn from a river.</td><td>10</td></tr>
<tr><td></td><td>b)</td><td>Describe briefly about the sedimentation process in a water treatment plant.</td><td>10</td></tr>
<tr><td>5.</td><td>a)</td><td>How does the rapid sand gravity filter work, explain briefly.</td><td>10</td></tr>
<tr><td></td><td>b)</td><td>What is meant by “disinfection’’ in treating public water supply? State its importance? What are the chemicals used in this process?</td><td>2+2+2=6</td></tr>
<tr><td></td><td>c)</td><td>What are the minor methods of disinfection?</td><td>4</td></tr>
<tr><td>6.</td><td>a)</td><td>How the quantity of waste water can be estimated?</td><td>2</td></tr>
</table>

	b)	Write about the different processes involved in the treatment of waste water.	10
	c)	What are the major differences between the characteristics of flows in sewers and waste water supply?	2
	d)	Describe briefly about the hydraulic design of sewers.	6

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